

powered subwoofer

operation manual

VX-860

VX-850



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Please record the following information for your records:

Serial Number: _____

Date of Purchase: _____



Dealer Name: _____

Dealer Address: _____

City/State/Zip: _____

Country: _____

Invoice Number: _____

 <p>The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>	<div style="background-color: black; color: white; padding: 5px; border: 1px solid black;"> <p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK</p> <p>DO NOT OPEN</p> </div> <p>CAUTION: TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>	 <p>The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.</p>
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1. SAFETY INSTRUCTIONS

1. **READ INSTRUCTIONS** - All safety and operating instructions should be read before this product is operated.
2. **RETAIN INSTRUCTIONS** - The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS** - All warnings on this product and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS** - All operating and use instructions should be followed.
5. **ATTACHMENTS** - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
6. **WATER & MOISTURE** - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
7. **ACCESSORIES** - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with accessories recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.
8. **POWER SOURCE** - This product should be operated only from the type of power source indicated on the marking label. If you are unsure of the type of power supply to your home, consult your product dealer or local power company.
9. **OVERLOAD** - Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.
10. **LIQUID ENTRY** - Never spill any liquid of any kind on the product.
11. **SERVICING** - Do not attempt to service this product yourself. Opening or removing covers, including any over bottom or side speaker drivers, may expose you to dangerous voltage or other hazards. Refer all service to qualified service personnel.
12. **DAMAGE REQUIRING SERVICE** - Unplug this product from the wall outlet and refer servicing to qualified personnel under the following conditions:
 - When the power-supply cord or plug is damaged.
 - If liquid has been spilled, or objects have fallen into this product.
 - If the product does not operate normally by following the operating instructions. Adjust only controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the product has been dropped or damaged in any way.
 - When the product exhibits a distinct change in performance - this indicates a need for service.
13. **REPLACEMENT PARTS** - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in risk of fire, electric shock, or other hazard.
14. **SAFETY CHECK** - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
15. **HEAT** - This product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

2. INTRODUCTION

Congratulations! You have just made perhaps the most exciting and dramatic addition that you could make to your audio or multichannel audio/video system. The new dimension of deep and powerful bass provided by your M&K VX-series powered subwoofer will thrill and excite you.

We encourage you to read this owner's manual, as there is a great deal of information provided here to help you get the best possible performance. This manual gives you basic hook-up instructions first, followed by more detailed technical, installation, and service information.

If you have any questions about your subwoofer, please contact your M&K dealer, or call us directly at (818) 701-7010, from 8:30 AM to 5:00 PM Pacific Time. We will be more than happy to help you with any question. You can also access our web site at: www.mkssound.com or send us an email to support@mkssound.com.

3. VOLTAGE SELECTOR AND POWER CORD

Adjacent to the AC power cord receptacle on the back of the subwoofer you will find a "Voltage" switch. This switch is pre-set at the factory for the proper local voltage, so there is no need to change the switch setting. For U.S. and Canada operation, the proper voltage setting is 115V.

WARNING: This voltage selector must be set to the correct local voltage with the proper fuse installed. Attempting to operate the subwoofer with the switch set to the incorrect position may damage the subwoofer and there is a risk of fire. Any such damage is not covered by warranty.

If you have any questions regarding this switch, please contact your dealer or the M&K factory.

DETACHABLE POWER CORD

The VX-860 and VX-850 are provided with a detachable power cord. This cord must be attached to the subwoofer BEFORE the cord is plugged into the AC wall socket.

4. WHERE TO LOCATE YOUR SUBWOOFER

M&K subwoofers perform well in most room locations. Unless your ear is a foot or two away from the subwoofer, you will hear the deep bass coming exclusively from your satellite (or main) speakers. There is no need to place your subwoofer in between the satellite speakers.

For the best performance, we recommend that your subwoofer be placed against a wall, preferably in a corner.

The ideal place for the subwoofer is the corner with the best structural strength. If the corners of your room are roughly equal in construction, use the corner nearest the listening position. If the listening position is in the front half of the room, place the subwoofer in a front corner. If the listening position is in the back of the room, it may be best to place the subwoofer in a back corner.

Feel free to experiment with the orientation of the subwoofer cabinet. Sometimes the best sound results from aiming the subwoofer's driver directly into the wall (1" to 2" from the wall itself).

If possible, avoid corners near doorways or openings.

Another option to find the best location for the subwoofer is to place the subwoofer at the listening position and walk around the room. Stand in and near each corner. The location where you hear the tightest bass with the most impact is probably the best location in the room for the subwoofer.

If you are using multiple subwoofers, place them in the same location. Stacking is best, but you can also put them side by side. See Section 9, page 10.

Alternately, you can put multiple subwoofers in different locations. This is appropriate when you have limited choices in locating the subwoofer and none of the available locations work well. Try to place multiple subwoofers at equal distances from the listening position to avoid phase cancellation.

Ultimately, the amount and quality of bass you get in your room are dependent on the room itself. Low frequency bass sounds are affected most by the size of the room and the method of construction used to build it. All rooms are different when it comes to reproducing bass, and in any given room, bass quantity and quality changes when the subwoofer is moved from one location to another.

A simple rule to remember is that you get more bass when you move the subwoofer towards any wall or corner. Moving it away from a wall or corner gives you less bass. Remember that the floor also loads the subwoofer, and that maximum bass is found with the woofer on the floor in a corner.

In some rooms, a corner location may excite resonance modes, resulting in a muddy or boomy sound. In these rooms, a more central location along a wall, away from the corner, may give better results. If you experiment, try to find a spot where no bass notes seem to overpower others and the overall sound is powerful and clean. The goal is to achieve a smooth sound quality, with the entire bass spectrum equally prominent. In most rooms, this is directly in the corner, not the center of the room.

Because the subwoofer generates a great deal of energy, its output may vibrate objects close to it. If you hear such vibration, you may need to damp the vibration of nearby objects.

One subwoofer is sufficient in a stereo system because of the nature of human hearing. The ear-brain hearing system is unable to locate the direction of bass sounds below approximately 150 Hz. The direction of low frequency sounds (drums, basses, etc.) is determined by the higher frequency overtones and harmonics that are reproduced by the satellite speakers.

Your powered subwoofer has an exceptionally sharp (36 dB/octave) low-pass filter to remove the midbass and midrange frequencies, unwanted in a subwoofer. This makes your M&K subwoofer truly non-directional.

Your M&K subwoofer is magnetically shielded. Shielding avoids magnetization of the shadow mask of the television's picture tube, which will distort the television's picture. If this ever happens to your set, turn it off and on a few times to use the set's built-in degaussing circuitry. If the problem persists, contact a TV technician and ask him to use an external degaussing coil.

No matter where you put the subwoofer, you must allow room for ventilation of its heatsink and backplate. The subwoofer's power amplifier is mounted on the backplate, and it generates heat.

1. Leave clearance around the subwoofer's heatsink. Do not cover it with drapes.
2. Do not place the subwoofer near baseboard heaters or forced air heating outlets.
3. Do not use the subwoofer outdoors or in a humid environment.

Do not plug the subwoofer into an AC outlet until all system wiring is complete.

5. SUBWOOFER HOOK-UP

There are two different ways to connect the subwoofer to your system. One uses speaker wire, and the other uses interconnect cable with RCA-type jacks.

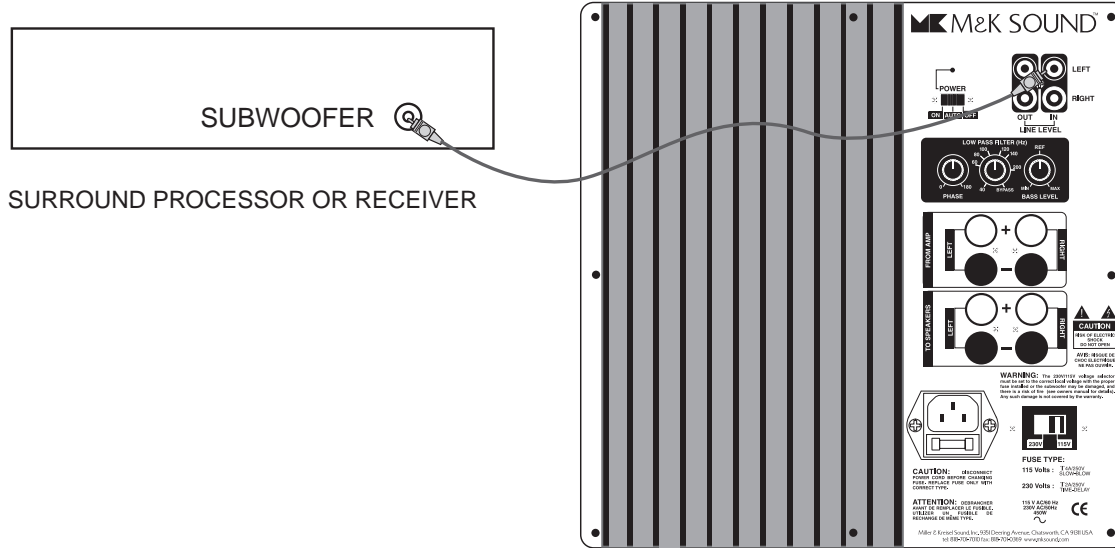
If your receiver or processor has a SUBWOOFER OUTPUT RCA-type jack, use it. This is the preferred connection for your M&K subwoofer. If your component does not, skip to "USING SPEAKER WIRE CONNECTIONS" on page 7).

You cannot use "TAPE OUT" jacks to connect your subwoofer, because these jacks have a fixed output level that does not change when you adjust the system volume control.

WIRING WITH THE RCA JACK INPUTS

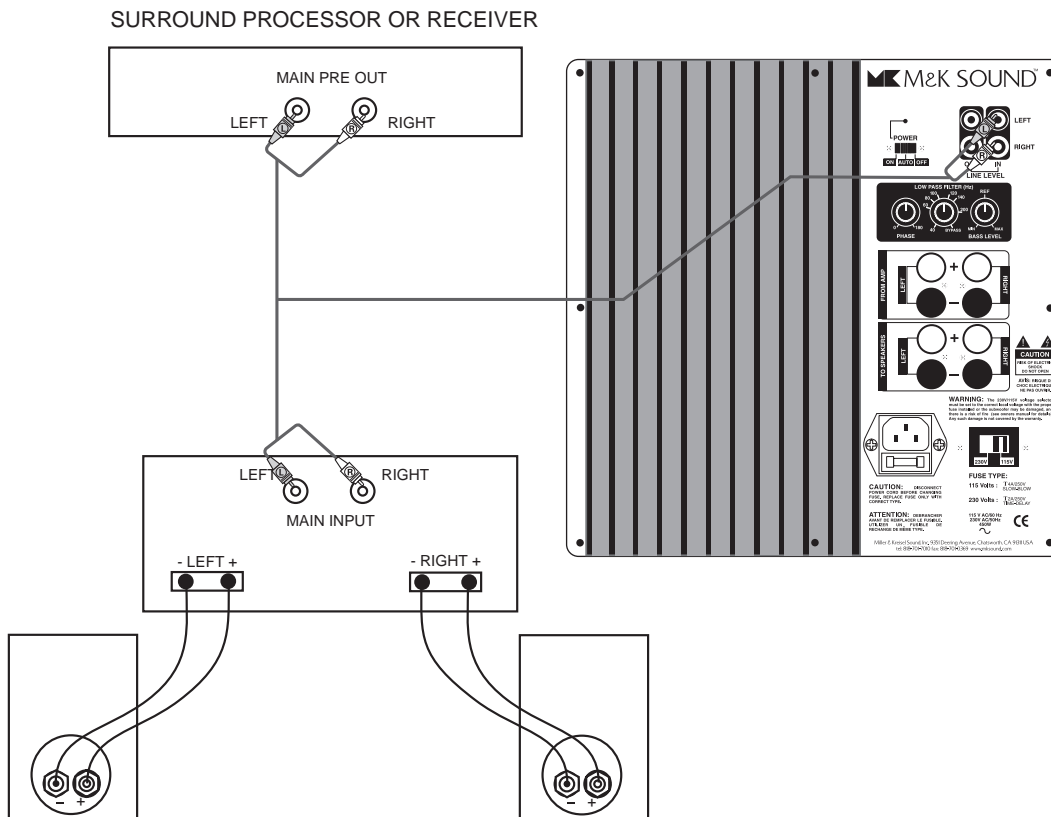
The "LINE LEVEL" RCA jacks on the back panel of your subwoofer allow you to directly connect the subwoofer to preamp-level components such as surround sound processors, preamplifiers, integrated amps and receivers with pre-amp outputs, Electronic High-Pass filters, crossovers, etc.

FIGURE 1 - CONNECTING TO A COMPONENT'S SUBWOOFER OUTPUT



This will give you better bass quality than using the speaker inputs, because it bypasses your amp or receiver's amplifier stage. To connect the subwoofer in this way, simply run one or a pair of shielded RCA - RCA interconnect cables from the output jacks on your component to the "LINE LEVEL" jacks on the Subwoofer's backplate. If you run one cable, connect it to the "LEFT" input jack. See Figure 1. It is not necessary to use both input jacks on the subwoofer.

FIGURE 2 - CONNECTING TO A STEREO AMP OR PREAMP



If you don't have a subwoofer output available, check to see if you have preamp outputs on your preamp, amp, or processor to be able to use these inputs. If you have only one set of preamp outputs, use a Y-connector to feed both the amplifier and the subwoofer. See Figure 2. Use a Y-connector to connect the signal to both the LEFT and RIGHT inputs of the subwoofer. These inputs are summed to mono in the amplifier input stage of the subwoofer.

USING SPEAKER WIRE CONNECTIONS

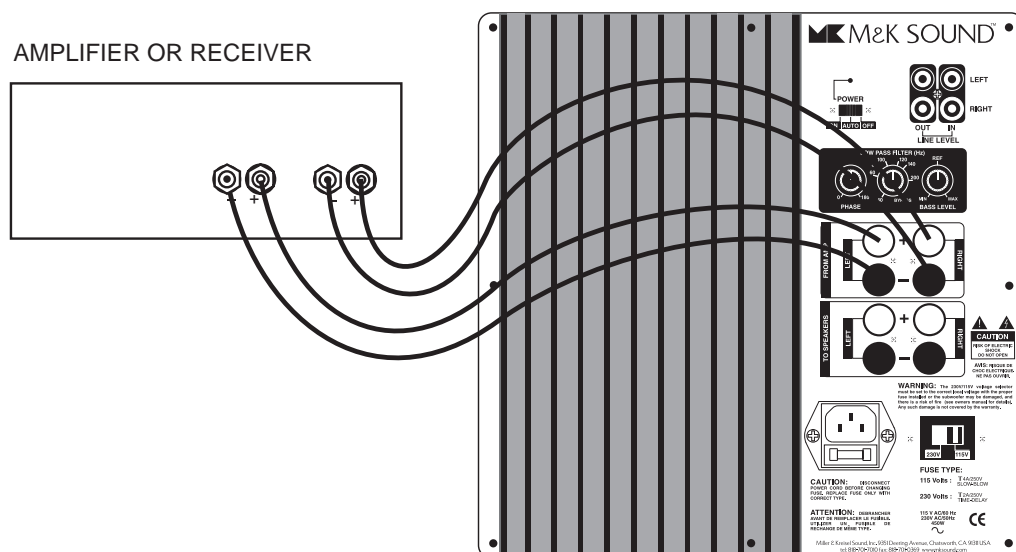
Some M&K subwoofer owners hook up their subwoofer by connecting it to their receiver or amplifier using speaker wires. To do so, you make the same kind of connections that you would use for your satellite (or main) speakers, except that both the left and right channels go to the subwoofer. (If you are using two subwoofers, connect one channel only to each subwoofer).

1. Run speaker wire between the Amplifier's Left channel output terminals and the subwoofer's Left channel "FROM AMPLIFIER" terminals.
 - A. Connect the Amplifier's Left channel Positive (+) terminal and the subwoofer's Left RED (+) "FROM AMPLIFIER" terminal.
 - B. Connect the Amplifier's Left channel Negative (—) terminal and the subwoofer's Left BLACK (—) "FROM AMPLIFIER" terminal.
2. Make matching connections for the Right channel. See Figure 3.

IMPORTANT NOTE FOR DOLBY PRO LOGIC SURROUND SYSTEMS: (NOT DOLBY DIGITAL 5.1)

When the subwoofer is connected to the Left and Right amplifier outputs, the Center channel WIDE/NORMAL switch MUST be set to the NORMAL mode. If the switch is set to the WIDE mode, the bass content of the Center channel will not be fed to the subwoofer, and a significant amount of bass in the program material will not be reproduced.

FIGURE 3 - WIRING TO AMP OR RECEIVER USING SPEAKER WIRES



SATELLITE SPEAKER WIRING OPTIONS

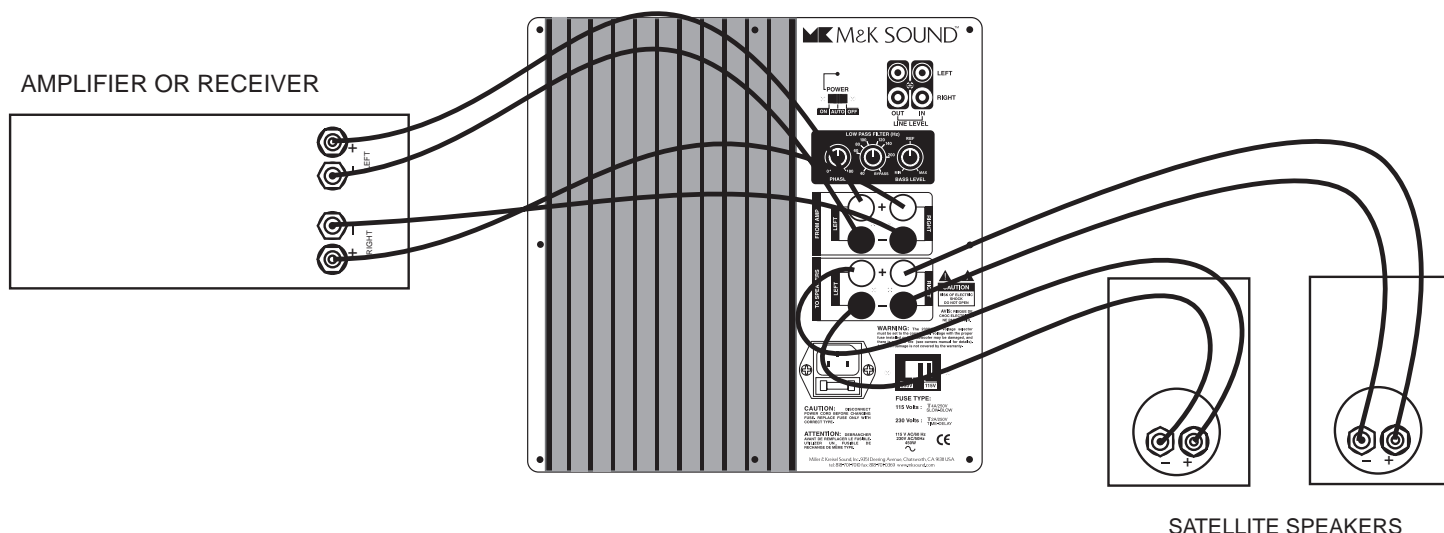
If you use speaker wires to connect the subwoofer, you have two options for the Satellite speakers.

1. Connect both the satellite speakers and the subwoofer direct to your amp or receiver, with one set of wires running to the satellites and another set to the subwoofer. See Figure 4, below.

2. You can also connect your satellite speakers to the subwoofer. If you choose to do this, connect the amplifier to the "From Amplifier" terminals on the back of the subwoofer and connect the satellite speakers to the "To Speakers" terminals on the back of the subwoofer. For each channel, make sure that the Positive (+) terminal on the amplifier is connected to the Positive (+) "From Amplifier" terminal (and the Negative (-) terminals are connected), and that the Positive (+) "To Speakers" terminal is connected to the Positive (+) terminal on the speaker (the Negative (-) terminals should also be connected).

If your amplifier has two sets of speaker outputs (e.g., A and B), you can connect the satellites to one set and the subwoofer to the other. But if you get weak or no output when you connect your speaker this way, connect both sets of speaker wires to the same output terminals.

FIGURE 4 - SATELLITE SPEAKER WIRING (OPTIONAL)



PLUGGING IN THE SUBWOOFER

Once all the speaker wires or preamp interconnect cables are in place, you are ready to plug in the subwoofer. Set the "BASS LEVEL" control to "MIN". Attach the power cord to the receptacle on the subwoofer's back panel. Then plug the cord into the AC outlet.

Slide the power switch to either the "AUTO" or "ON" position. If you hear a "thump" from the subwoofer, this is the normal sound of its power supply charging.

"AUTO" SWITCH POSITION

In the "AUTO" switch position, the subwoofer is in an idle condition when your system is turned off and no signal is being fed to the subwoofer. When the subwoofer receives a signal from your receiver or processor, it automatically switches on.

"ON" SWITCH POSITION

In the "ON" switch position, the subwoofer is fully active, whether or not your other components are turned on.

Do not plug the subwoofer into a switched outlet on another component.

Now, play some music through your system to make sure that the satellite speakers are working properly. If they are, carefully advance the "BASS LEVEL" control. The subwoofer should begin to play. Set the "BASS LEVEL" control

where the subwoofer sounds in balance with the satellite speakers. If the system is not working properly, unplug the subwoofer and check all of your connections. Call your dealer or the factory if you cannot solve any problem.

6. USE OF THE "PHASE" CONTROL

Your subwoofer has a phase control that allows for continuous adjustment between 0° and 180° degrees. This control let you fine tune the transition between the subwoofer and your other speakers.

To optimize the sound of your new subwoofer, you need to perform a Phase Test. This test insures optimum sound in the critical bass frequencies where your subwoofer and Satellite speakers overlap.

Play a familiar CD, LP, or tape with steady, consistent bass. Set the "PHASE" control to the 0° position. Listen carefully to the mid-bass (70 - 100 Hz) region — the part of the spectrum where electric or string basses and drums are found. Then, adjust the "PHASE" control to the 180° position.

Now listen to the same musical passage, concentrating on the mid-bass region. If you hear less bass, the previous 0° position, would be the correct. If you hear more bass, the new 180° position is correct. If you have two subwoofers, perform one test for each subwoofer. When you perform each test, make sure the other subwoofer is not operating by switching it to the "OFF" position or unplugging the power cord.

Once you have established which position gives the most bass, you can further fine-tune the control to produce the best possible sound by adjusting it between 0° and 180°. When you hear the best balance between stereo image localization and maximum impact and output in the midbass, you have found the correct setting.

If you hear little or no difference when you adjust the "PHASE" control knob, set it to the default 0° position.

Another method of setting phase uses a pink noise source and a spectrum analyzer. If you have these, place the microphone at the main listening position and look at its display in the mid-bass region of 70 - 100 Hz. The wiring/ switch position showing the most output in that region has the correct phase.

You need to perform this test because when satellite speakers are located separate from a subwoofer, each speaker is at a different distance from your ear. In some cases, the difference will be just enough so that the output from the subwoofer arrives out of phase with the output of the satellites. When this happens, that critical mid-bass is actually cancelled. You should re-do this test any time you move your speakers

7. USE OF THE "LOW PASS FILTER" CONTROL

The back panel control "LOW PASS FILTER" sets the upper rolloff point of the subwoofer, eliminating mid-bass and midrange that are being reproduced by your satellite speakers. The control is a means of fine-tuning the transition between your subwoofer and satellite speakers, and it provides a rolloff of 12 dB/octave up to 200 Hz, where the filter shifts to 36 dB/octave. In most systems, including M&K satellites, 85 Hz gives the best blend. If you don't want to experiment, set the control at 85 Hz. If you are using the K-5 / K-7 Satellites, set the control to 100Hz. If you are using Xenon satellites (LCR45, LCR35, or LCR25), or the MP4512, set the control between 125 and 200 Hz.

The goal is to get a balanced acoustic output in your room. This is not necessarily the same as flat electrical output. Rooms typically reinforce bass frequencies around 100 Hz, so by leaving an electrical gap, you may actually get a smooth acoustical response where it matters, in the room.

Think of this control as a mid-bass fine tuning adjustment that you set to achieve the best transition between the satellite speakers and the subwoofer. When you hear a smooth sound overall, well balanced between the deep bass and the rest of the audible spectrum, the control is set properly.

8. USE OF THE "BYPASS" SETTING

If you have a THX, Dolby Digital, or DTS component with a built-in Low-Pass filter as part of its subwoofer output, or if you are using a separate Electronic Crossover, set the "LOW PASS FILTER" switch on the back of the subwoofer to "BYPASS" position. This bypasses the internal low-pass filter so that there is no interaction between the subwoofer's filter and your component's filter. If you have any questions regarding the filters, please contact your M&K dealer or the M&K factory.

9. USING MULTIPLE SUBWOOFERS

Using two (or more) subwoofers in your system gives you the ultimate in bass performance. You'll hear improved impact and definition, as well as greater output and dynamic range.

If multiple subwoofers are used, place them in the same location. Stacking is best, but you can also put them side by side. Alternately, you can put multiple subwoofers in different locations. This is appropriate when you have limited choices in locating the subwoofer and none of the available locations work well. Try to place multiple subwoofers at equal distances from the listening position to avoid phase cancellation.

With two subwoofers, simply run one speaker wire or interconnect to each subwoofer. Because the left and right channel input signals are combined in the subwoofer's input stage, the only thing this changes is amplifier gain. To compensate, just set the "BASS LEVEL" control slightly higher.

10. HOME THEATRE USAGE

If you are using your subwoofer in a multichannel Home Theatre system, make sure you are using the subwoofer Output jack to connect your subwoofer. Check "Use of the Bypass Setting" above, as well as M&K's System Setup Guide on page 12.

Compared to music sources, in some cases, you may prefer the subwoofer set to a higher playback level for video sources. This may occur when video sources (especially older films and some television) have very little deep bass present. You may also want to exaggerate the effect to make spectacular video sources even more impressive!

CONNECTING THE SUBWOOFER TO A SURROUND SOUND RECEIVER OR PROCESSOR:

The preferred connection from a surround sound amp or controller is from a SUBWOOFER OUTPUT (or MONO) RCA jack. This connection insures that a full bass signal is fed to the subwoofer. If your component doesn't have a subwoofer output jack, connect the subwoofer to the front Left and Right channel speaker outputs (do not use the Center channel speaker output).

VERY IMPORTANT: When the subwoofer is connected to the Left and Right amplifier outputs using speaker wires, the Center channel WIDE/NORMAL switch **MUST** be set to the NORMAL mode. If the switch is set to the WIDE mode, the bass content of the Center channel will not be fed to the subwoofer, and a significant amount of the bass in the material you are listening to will be lost.

11. TROUBLESHOOTING

Your M&K subwoofer amplifier circuit provides high reliability, and, if necessary, easy modular replacement of parts. This guide will help you to solve or diagnose most problems that can occur with your subwoofer. In the event that a fuse blows, you must replace it with a fuse of the correct value to avoid a fire hazard and to maintain your warranty protection.

- A. If your subwoofer has no output:
1. Make sure that the subwoofer is plugged into an AC outlet and that the cord is securely plugged into the back of the subwoofer.
 2. Make sure that the "POWER" switch is set to the "AUTO" or "ON" position. If you hear no output with the switch set to "AUTO", move the switch to the "ON" position.
 3. Check the "BASS LEVEL" control and make sure that it is set above the "MIN" position. Rotate it clockwise if it is set to the "MIN" position.
 4. Check the red LED on the subwoofer's back panel. If the LED is not lit, check the AC fuse next to the LED. Unplug the subwoofer before changing the fuse. See instructions on Page 12. If the element inside the fuse is broken, replace the fuse. If it blows again, contact your dealer or M&K.



5. If the red LED is lit, try this test: Turn the "BASS LEVEL" control to "MIN". Plug a standard RCA cable into the "FROM PREAMP" jacks. Lightly touch the plug at the free end of the cable, while slowly turning the "BASS LEVEL" control clockwise. If you hear noise from the subwoofer when you touch the cable, the subwoofer is functioning. Look elsewhere in your system for the problem. If you hear no noise, contact your dealer or M&K.
6. Make sure that the input cables are OK. Double check your connections. If necessary, replace any defective cables or speaker wires.

- B. If, after operating the woofer at high volume levels for a long time, the woofer cuts out or becomes intermittent:

Your subwoofer has a protection circuit that protects it from overheating. After hours of continuous operation at extremely high volume levels, this circuit may cut off the power to the subwoofer. When it activates, the sound may switch in and out rapidly, with a fluttering sound. If this happens, unplug the unit and let it sit for at least half an hour. After that time, plug it back in. It should operate normally. If you find this happens frequently, contact the factory for advice.

- C. If you are using the "FROM AMPLIFIER" terminals, and the subwoofer has very little output:

Make sure that the input cables are in phase. Reverse the (+) and the (—) connections for ONE CHANNEL ONLY at the "FROM AMPLIFIER" terminals. If the problem remains, put the cables back as they were. Then perform the test in Step 4.

- D. If the midbass range (the area of transition between Subwoofer and Satellite speakers) sounds weak:

Refer to Section 6, Phasing Test, on page 9. Reverse the (+) and (—) connections at the back of BOTH Satellite speakers, OR switch the "PHASE" switch from (+) to (—) or vice versa. The wiring configuration that gives the most bass is correct.

- E. If you are using the "FROM PREAMP" input terminals, and you hear a thump through the Subwoofer every time you turn the system on:

- F. If you hear a persistent hum or buzz through the subwoofer:

Because the subwoofer reproduces the 60 Hz hum frequency, it is often blamed for causing hum that originates elsewhere in the system. Always avoid running all speaker wires and RCA interconnect cables near to AC cords and component power supplies. Wires and cables running close to AC lines are a common source of hum. If necessary, reroute your cables.

To identify the source of hum, remove all input cables to the subwoofer, but leave it plugged into the AC outlet. Carefully turn the "BASS LEVEL" control up towards the "MAX" position. If you hear hum coming from the subwoofer's speaker driver, the subwoofer is the source of the hum. If you hear no hum or less hum, the problem is probably coming from another component.

Hum can also be caused by AC ground loops. If the subwoofer is plugged into a separate AC outlet, try plugging it into the same outlet used for your amplifier or receiver, or reverse the polarity of its AC plug. If these suggestions do not solve your problems, contact your dealer or M&K.

- G. If there is an unusual sound coming from the subwoofer with no music playing:

Try removing the input cables as described in Step 5 above. If the noise disappears, it is coming from another component. If it does not go away, contact your M&K dealer or the factory.

IF YOU NEED TO REPLACE THE EXTERNAL FUSE:

Disconnect supply cord before changing fuse. Replace fuse only with same type.

Remove the fuse cap and inspect the fuse. Look carefully at the fuse. If the wire filament inside the glass is broken, replace the fuse **ONLY** with one of the identical size and value. Using a fuse of a larger value will void your warranty **AND MAY CREATE A FIRE HAZARD**. Plug the subwoofer back in. If it does not work, unplug it immediately, and contact your dealer or M&K for service.

12. IF YOU NEED SERVICE

Contact your dealer or M&K. Please have the unit's model and serial numbers (found on the back of the cabinet), date of purchase, the name of your dealer, and a complete description of the problem. You can call M&K between 8:30 AM and 5:00 PM Pacific Time, Monday through Friday, at (818) 701-7010. If you call outside these hours, leave a message, and we will return your call. Alternatively, an e-mail can be sent to service@mkssound.com.

DO NOT RETURN YOUR SPEAKERS TO THE FACTORY FOR SERVICE WITHOUT OBTAINING PRIOR AUTHORIZATION

All M&K powered subwoofers carry a five year limited parts and labor warranty. This warranty is transferable to subsequent owners up to three years from the date of original purchase, and it includes subwoofer amplifiers. It does not cover abuse, misuse, repairs by unauthorized service stations, speakers without serial numbers, and speakers damaged in shipping or by accident. If you have any questions about the warranty, please contact M&K.

13. M&K 5.1 MULTICHANNEL & PRO-LOGIC SYSTEM SETUP GUIDE

The 5 Most Important Items In System Setup:

- 1. Find the best location for the subwoofer for maximum output and flattest response (usually the corner closest to the listening position)**
- 2. Aim the front speakers (and the surrounds, if possible) vertically for the flattest response and best imaging**
- 3. Set all speakers to the Small setting for proper High-Pass and Low-Pass Filter operation to get the lowest distortion and maximum dynamic range**
- 4. Calibrate all speakers and the subwoofer to the identical level for proper imaging and balance**
- 5. Make sure all speakers are in phase for proper imaging and impact**

These instructions will help you make sure that you cover all steps in setting up a 5.1 multichannel or Pro-Logic surround sound system. In addition to following this list, make certain that you study and understand the owner's manual for each and every component used in the system, especially the processor/receiver's manual. Have fun and good luck!

A useful tool for system setup is the DVD called Video Essentials. If you don't have one, you can order it by visiting www.videoessentials.com.

Here are the instructions for speaker setup.

- A. Locate the front speakers. The left, right, and center speakers should be equidistant from the main listening position. Try to set up the speakers so that they are reasonably symmetrical to room surfaces. A tape measure may be very helpful.



B. Locate the subwoofer.

1. The best place for the subwoofer is the corner with the best structural strength. If the corners are roughly equal in construction, use the corner nearest the listening position. If the listening position is in the front half of the room, place the subwoofer in a front corner. If it is in the back of the room, place the subwoofer in a back corner. If possible, avoid corners near doorways or openings.
2. If you are willing to experiment, another option is to place the subwoofer at the listening position and walk around the room. Stand in and near each corner. The location where you hear the tightest bass with the most impact is probably the best location in the room for the subwoofer.
3. If multiple subwoofers are used, place them in the same location. Stacking is best, but you can also put them side by side.

Another option for multiple subwoofers is to place them in different locations. This is appropriate when you have limited choices in locating the subwoofer and none of the available locations work well. Try to place multiple subwoofers at equal distances from the listening position to avoid phase cancellation.

C. Locate the surrounds. Determine the best position in the room. It will probably be the position used for THX speaker, directly to the right and left of the main listening position on the side walls (so that a listener in the center seat is directly between the speakers). If that doesn't work or is not practical because of the room, try these locations: on the ceiling; on the back wall, or in the back corners (using an M&K ST Corner bracket).

D. Install all wiring and interconnects.

E. Aim the front speakers (this is a must for THX front speakers). Use a laser level to align each speaker. Place the level on the flat surface between the midranges and tweeters that is roughly in the center of the front baffle. The red dot of the laser should be aligned to the center of the listener's fore head at ear height. Make sure that the volunteer who sits in the main listening position keeps their eyes closed!

Make sure that you aim the left and right speakers in both the horizontal and vertical planes. Horizontal toe-in is important for the best possible imaging.

F. If you have a Dolby Digital AC-3 5.1 channel processor/receiver, follow these instructions. If you have a Pro-Logic processor/receiver, go to item 7 below.

SPECIAL NOTE: Always check the processor/receiver's owner's manual. Different manufacturers use different descriptions for the same function, and sometimes the same description for different functions!. Your component may use terminology different from that used below.

1. High-Pass Filters: All Dolby Digital processor/receivers have built-in high-pass filters for the Left, Center, Right, Left Surround, and Right Surround channels. Always turn these filters ON by using the SMALL setting. If you have a THX component, use the THX setting. See the owner's manual of the processor/receiver for instructions.
2. Bass Management: If the processor/receiver has a setting to turn the Subwoofer off or on, make sure that it is set to SUBWOOFER YES or ON.
3. Dialog Normalization: If your component has this function, turn it off to avoid any possible effect on sound quality.
4. THX Dolby Digital units have an adjustable limiter for the subwoofer feed, called "Bass Peak Level Management". Turn it off, or set it for the highest possible level. M&K subwoofers do not need this limiter.

G. If you have a Pro-Logic only processor/receiver, follow these instructions.

SPECIAL NOTE: Always check the processor/receiver/receiver's owner's manual. Different manufacturers use different descriptions for the same function, and sometimes the same description for different functions! Your component may use terminology different from that used below.

1. If the component has high-pass filters for the Left, Center, and Right channels (usually only THX components have these filters), they should be turned on or set to THX (if you have a choice, use the frequency closest to 80 Hz. The surround channels in a Pro-Logic only system do not have switchable filters).
2. Set the center channel to Normal, unless you have a THX controller. With a THX controller, set the center channel to the THX setting.
3. Turn off all limiters and compressors, auto azimuth controls, auto balance controls, etc.
4. If the processor/receiver/receiver has an input level control, calibrate it per the manufacturer's instructions.
5. If the component has a digital input, and you are using a source component with a digital output, always use the digital input, not the analog input.

H. Set levels for each channel. You can take a measurement at the listening position to establish the reference level, but it is usually more accurate to take levels at about one meter from each speaker. Set all channels to exactly the same level.

Use a Sound Level Meter. Point it directly at the speaker being measured. Set all channels to the same level, using the processor/receiver/receiver's internal test signal. Set the meter to "C" weighting and "Slow" response. Set the levels to 75 dB if you have a THX processor/receiver/receiver or are using the Video Essentials disc as a source for setting levels.

NOTE: If you using identical speakers anywhere in your system (e.g., S-150THX speakers for the left, center, and right channels), all of those channels should be set to the same level. If your meter measures a different level, it is probably a limitation of this type of meter measurement method and not an actual audible level difference. Set the channels using identical speakers to the same level, unless you actually hear a difference later when you are doing listening to verify the system setup.

- I. Check phase. Make sure that all five main channel speakers are wired in phase. The Video Essentials disc has tests for main speaker phase.
- J. Make sure that the subwoofer and main speakers are in phase at the 80 Hz crossover point. Listen to something with a consistent bass line around 80 Hz while a partner switches the "Phase" control on the subwoofer from "+" to "-". The switch position that results in the greatest bass at the listening position is the correct setting.
- K. Play something that is familiar to you through the system to verify the system's overall performance. If something does no sound right, recheck your connections and settings. Re-measure, re-check, re-align.
- L. Switch the processor/receiver to each input that you will use. Check your settings for each input and each mode. Some processor/receivers require that you enter settings separately for each mode and/or input.
- M. Before playing the system, check levels and speaker alignment one last time. Make sure that you write down all processor settings for future reference.



14. SPECIFICATIONS

VX-860

ENCLOSURE TYPE:	Sealed Box
WOOFER:	Single 12" Driver
POWER RATING:	250 watts RMS
FREQUENCY RESPONSE:	20Hz - 200Hz \pm 3dB
DIMENSIONS (HxWxD):	0" x 0" x 0"
WEIGHT:	lbs./ kg.

VX-850

ENCLOSURE TYPE:	Sealed Box
WOOFER:	Single 12" Driver
POWER RATING:	250 watts RMS
FREQUENCY RESPONSE:	20Hz - 200Hz \pm 3dB
DIMENSIONS (HxWxD):	0" x 0" x 0"
WEIGHT:	lbs./ kg.